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(56) Documents Cited  
GB 2183449 A GB 1356465 A GB 0902691 A  
EP 0073183 A EP 0033569 A US 4430086 A

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UK CL (Edition M ) A3V  
INT CL<sup>5</sup> A41B 9/02 9/04 9/12, A61F 13/15 13/56 13/72

(54) A sanitary pantie or light-incontinence guard

(57) The pantie comprising a back-part (2) a front-part (1), an intermediate crotch-part (3) and elastic devices (11 - 14) which extend between the front-part and the back-part of the pantie and function to press an absorbent body (8) permanently mounted or removably attached to the pantie into abutment with the wearer's body. In particular, two of the elastic devices (11, 12) extend from a region (V) in the crotch-part of the pantie to the front-edge of the front pantie-part (1) while diverging relative to one another and extending generally symmetrically in relation to a central line (A - A). Waist and leg elastics 4, 5, 6, 7 are also provided. The absorbent body may comprise primary and secondary absorbents 9 and 10.

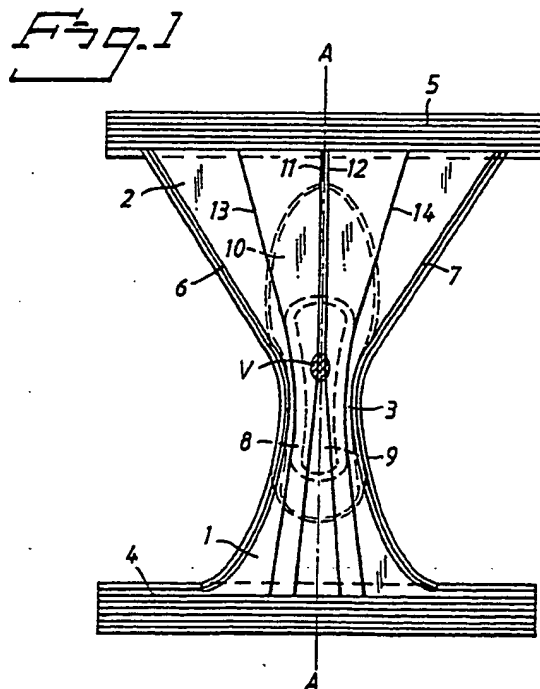


Fig. 1

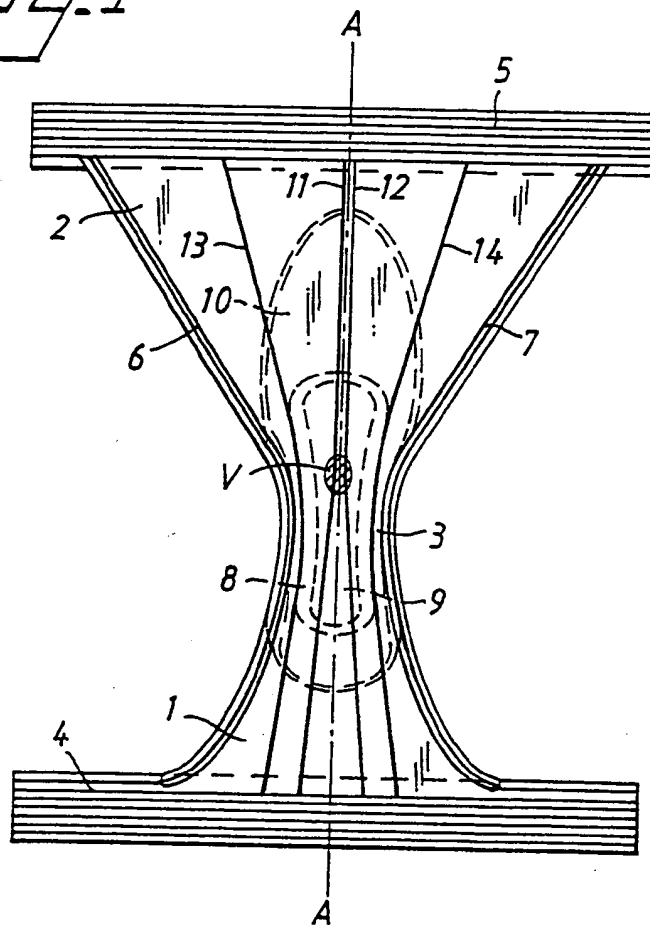


Fig. 2

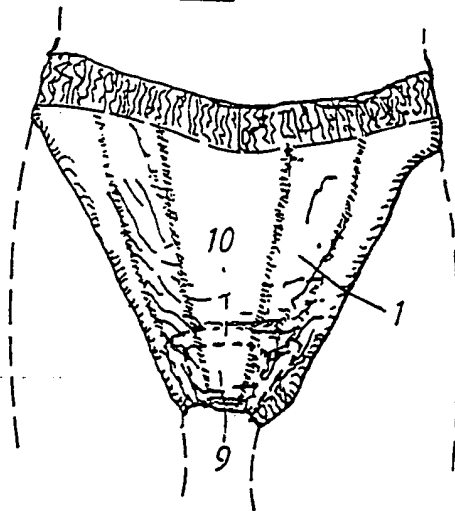


Fig. 3

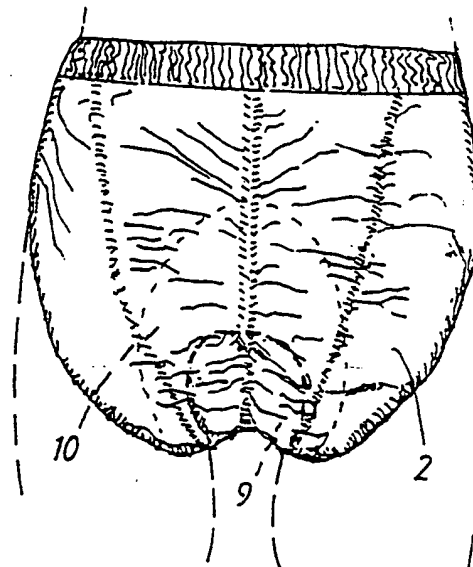


Fig. 4

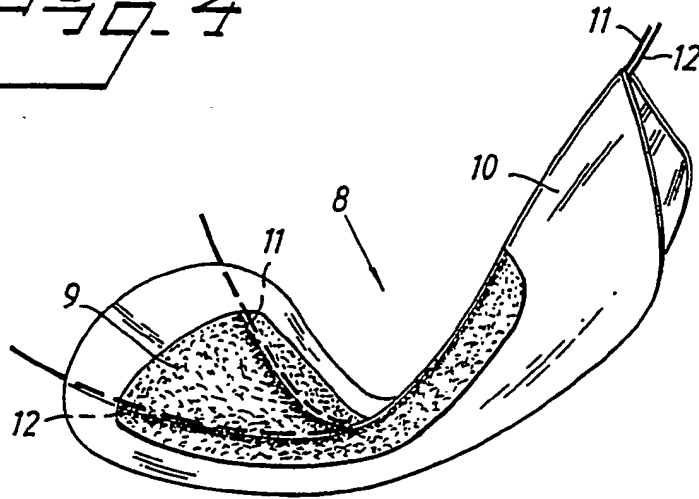
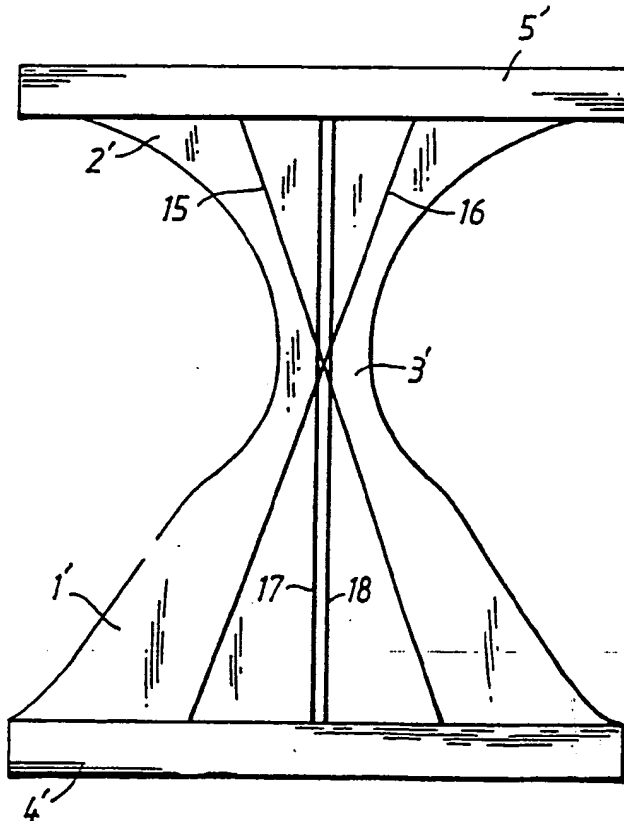


Fig. 5



A Sanitary Pantie

5 The present invention relates to a sanitary pantie or  
to a light-incontinence guard comprising a back-part,  
a front-part, an intermediate crotch-part and elastic  
devices which extend between the front-part and the  
back-part of the pantie and which function to press an  
absorbent body permanently mounted or removably  
attached to the pantie into abutment with the wearer's  
10 body.

SE-B-434,006 describes a sanitary pantie of this kind  
which includes a plurality of mutually parallel elas-  
tic threads which extend in a straight line between  
15 the front and back parts of the pantie. The object of  
the pantie according to this publication is to elimi-  
nate the drawbacks of sanitary panties that are pro-  
duced entirely of elastic material, by causing the  
uniformly distributed elastic threads to press a  
20 sanitary napkin or like article carried in the pantie  
into essentially uniform abutment with the wearer's  
body. However, the known pantie has not been found to  
provide a completely satisfactory solution to the  
problem of providing a sanitary pantie which is com-  
25 fortable to wear and which prevents leakage from an  
absorbent body or pad carried by the pantie.

The object of the present invention is to solve this  
problem more effectively than known sanitary panties  
30 and to provide a sanitary pantie which is comfortable  
to wear and which is highly effective in preventing  
leakage from an absorbent body carried by the pantie.

This object is achieved in accordance with the inven-  
35 tion by means of a sanitary pantie of the kind defined  
in the introduction which is characterized in that two  
elastic devices extend from a region in the crotch-  
part of the pantie to the front-edge of the front-part  
of the pantie while diverging in relation to one

another and extending generally symmetrically in relation to a centre line through the back-part, the crotch-part and the front-part of the pantie. In addition to pressing corresponding parts of the absorbent body into abutment with the wearer's body within the region in which the elastic devices extend, the elastic devices also form the absorbent body into a shape which conforms with the anatomy of the wearer, wherein those parts of the absorbent body which lie between neighbouring elastic devices will also conform well to the wearer's anatomy.

According to one preferred embodiment of the inventive pantie, at least one elastic device extends from that region which is located in the diaphragm or midriff region of the wearer in use extends to the rear-edge of the back-part of the pantie essentially along a central line which extends through the front-part, the crotch-part and the back-part of the pantie. Preferably, further elastic devices extend divergently relative to one another and symmetrically in relation to a central line passing through the front-part, the crotch-part and the back-part of the pantie, from the centre-part of said crotch-part to the rear-edge of the back-part and to the front-edge of said front-part. The outermost elastic devices of said further elastic devices in relation to said central line extend along the side-edges of an absorbent body that coacts with the pantie, at least within the centre-part of the crotch-part. The elastic devices may conveniently comprise elastic threads, ribbons or bands and the pantie may be comprised of two layers or sheets with the elastic devices mounted therebetween. The aforesaid two sheets are preferably joined together and to the elastic devices by gluing or ultrasonic welding.

Exemplifying embodiments of an inventive sanitary pantie will now be described with reference to the accompanying drawings, in which

5 Figure 1 is a view of a first embodiment of an inventive sanitary pantie taken from above, before fastening the waist-parts of the pantie together;

10 Figures 2 and 3 are front and rear views respectively showing the sanitary pantie of Figure 1 when assembled and when worn;

15 Figure 4 is a schematic illustration showing deformation of an absorbent body inserted in a pantie worn by a user; and

Figure 5 is a view similar to Figure 1 illustrating a second embodiment of an inventive sanitary pantie.

20 Figure 1 illustrates a sanitary pantie according to one embodiment of the invention and shows the pantie in a stage of manufacture prior to joining together the front and the rear waist-parts. The illustrated pantie includes a front-part 1, a back-part 2 and an  
25 intermediate crotch-part 3. The pantie is also provided conventionally with waist elastic, which in the illustrated case has the form of elastic ribbon 4, 5 mounted along the front-part and the back-part of the waist edge, and leg elastic in the form of elastic  
30 threads 6, 7 extending along the side-contours of the pantie between the elastic ribbons 4, 5. In the illustrated case, two elastic threads are mounted along each side-edge of the pantie, although it will be understood that the leg elastic may, instead, consist  
35 of more or fewer threads than shown or of elastic ribbons or the like. Figure 1 also shows an absorbent body or pad 8 in broken lines, which may be either attached firmly to the pantie or removably joined thereto. The illustrated absorbent body 8 is comprised



of a primary absorbent body 9 and a secondary absorbent body 10 and is particularly suited for night use.

5 The pantie is also provided with two elastic threads  
11, 12 which extend between the respective elastic  
ribbons 4 and 5 of the front and back parts 1, 2,  
symmetrically in relation to a centre line A-A extend-  
ing in the longitudinal direction of the pantie. The  
10 threads 11, 12 extend close together and parallel with  
the longitudinal pantie line, from the waist-edge of  
the back-part 2 or the rear-edge of said back-part to  
a crotch region V, which when the pantie is worn is  
located in the midriff region of the wearer. The  
15 threads 11, 12 extend divergently from this region V  
to the waist-edge or the front-edge of the front-part  
of the pantie.

When wearing a pantie constructed in accordance with  
the Figure 1 embodiment, those parts of the threads  
20 11, 12 which diverge forwardly from the region V  
strive to bring the absorbent body 8 to a basin-like  
shape within this region, this basin-like shape corre-  
sponding well to the wearer's anatomy within this  
region. Those mutually parallel parts of the threads  
25 11, 12 which extend rearwardly from the region V  
strive to press corresponding central parts of the  
absorbent body 8 in between the wearer's buttocks when  
the pantie is worn, thereby causing the absorbent body  
to lie safely against the wearer's body, at least  
30 within the crotch-part and the beginning of the back-  
part of the pantie, so as to provide effective safety  
against rearward leakage. The aforementioned shaping  
of the absorbent body is illustrated schematically in  
Figure 4.

35 The pantie illustrated in Figure 1 also includes elas-  
tic threads 13, 14 which lie laterally outside the  
threads 11, 12 and which are mutually convergent  
between the front-part and the back-part of the pantie

and are mutually divergent in the back part of the pantie. The elastic threads 13, 14 follow the side contours of the primary absorbent body 9, along a major part of their length extension. The threads 13, 14 thus ensure that the side-edges of the primary absorbent body will be pressed into sealing abutment with the wearer's body and also contribute towards ensuring that the secondary absorbent body will follow the wearer's body effectively. It should be mentioned in this connection that the secondary absorbent body is thin and very pliable and is intended to form an additional safety zone for absorbing any leakage that may occur during long-term use of the absorbent body, for instance over a full night, and that its absorption capacity may be relatively small.

When the absorbent body that coacts with the sanitary pantie is to form an integral part of the pantie, the absorbent body is preferably anchored to the pantie in the stage of manufacture illustrated in Figure 1, in which the aforescribed elastic elements are in a stretched state. When manufacture of the pantie is completed, the elastic elements strive to contract to a relaxed or tensionless state. This results in the formation of folds in those regions of the pantie which lie outside the primary absorbent body 9, and the threads will contract to a generally relaxed state within these regions. Within the region of the primary absorbent body 9, the absorbent body counteracts gathering of the pantie into folds, to a greater or lesser extent dependent on the stiffness thereof. Present-day thin absorbent bodies are extremely pliable and will therefore be folded by the elastic threads, although the threads are prevented from relaxing totally. Thus, when the pantie is put on the wearer's body, the folds in the absorbent body 9 will be smoothed out and the body will be brought into abutment with the wearer's body by the elastic force in respective threads 11-14. The absorbent body 9 will

obtain a concave basin-like shape from the region V and forwards, due to the wearer's anatomy, causing the contracting force exerted by the threads 11-14 within this region to strive to retain this basin-like shape while, at the same time, those parts of the absorbent body 9 which lie along the threads will be pressed into sealing abutment with the wearer's body. The mutually parallel parts of the threads 11, 12 ensure that the part of the absorbent body 9 that lies rearwards of the region V will be deformed so as to conform to the shape of the wearer's anatomy in this region and so that the part of the absorbent body that lies between the wearer's buttocks will come into sealing abutment with the wearer's body. In addition to ensuring that the side-edges of the absorbent body 9 will sealingly abut the wearer's body, the elastic threads 13, 14 also function to prevent the formation of folds or buckles in the pantie or in the secondary absorbent body.

When the pantie illustrated in Figure 1 is intended to be used together with a removable absorbent body, the absorbent body should be inserted with the elastic threads outwardly stretched at least within the region of attachment of the primary absorbent body. A pantie of this kind will function essentially in the manner described above with reference to an integrated absorbent body. This is also a natural method of attaching the absorbent body, since folds would otherwise form in the crotch-part of the pantie. It should be mentioned in this connection that a removable absorbent body which is intended to coact with the inventive pantie will preferably have a stiffness such as not to be folded by the elastic threads after attachment to the pantie, but merely curved.

Figures 2 and 3 illustrate schematically the form taken by the sanitary pantie of Figure 1 when worn,

the relevant parts of the wearer's body being shown in broken lines.

5 In the case of the Figure 1 embodiment, the elastic devices 11-14 are elastic threads. It will be understood, however, that the necessary elasticity of the pantie can be achieved in ways other than with the aid of elastic threads. For instance, the elastic devices may have the form of elastic bands, ribbons or elastic  
10 film, or nonwoven material cut to the desired shape. It is also conceivable to produce the pantie from an elastic material and to remove the elastic properties of the material in some suitable way within desired regions or areas. Different types of elastic material  
15 may be combined in the illustrated pantie. For instance, soft bands or ribbons of elastic foam may be used as leg elastic, while complete pieces of elastic nonwoven material may be used for the waist elastic. It is also conceivable for the elastic devices 11-14  
20 to comprise parts of mutually different materials. For instance, the parallel parts of the threads 11, 12 can be replaced with a centrally extending band while the diverging parts are comprised of elastic threads.

25 The pantie illustrated in Figure 1 is preferably comprised of two sheets which are mutually joined in some appropriate manner, for instance glued, and the elastic devices are mounted between these sheets and fastened thereto, for instance glued or welded with  
30 ultrasonic welds or heat welds. The elastic may also be sewn in the pantie.

35 As before mentioned, the absorbent body 8 illustrated in Figure 1 is comprised of a primary and a secondary absorbent body 9 and 10 respectively. The primary absorbent body 9 is constructed in the same manner as a conventional absorbent body or pad of a sanitary napkin and will have an absorbency sufficient to handle fluid discharged by the wearer over the

intended use time-period, for instance a full night. For instance, the absorbent body may be comprised of one or more layers of compressed cellulose fluff which may or may not contain superabsorbent material. The  
5 absorbent body 9 is advantageously comprised of one or more layers of roll material, i.e. absorbent material which has earlier been compressed and treated so that the materials can be stored in the form of rolls. Such absorbent bodies may be very thin and pliable while  
10 still having sufficiently high absorbency for use as a night napkin. The secondary absorbent body 10 has much larger extensions than the primary absorbent body and extends rearwardly over a larger part of the back-part of the pantie. The primary purpose of the secondary  
15 absorbent body is to enhance leakage safety and shall therefore have a given absorbency. To this end, the secondary absorbent body may be comprised of tissue, nonwoven or other roll material. The secondary absorbent body 10 will also preferably contain means for  
20 preventing liquid from spreading over the surface of said body. Such fluid-spreading barriers may be obtained, for instance, by folding, pleating or crêping the material sheet or layer of said body, or by providing barrier-type welds. It is also conceivable to  
25 use a nonwoven material which includes fibres of so-called superabsorbent material which, when absorbing fluid, bind the absorbed fluid chemically. However, the secondary absorbent body will, in general, be equally as pliable and supple as the pantie material,  
30 so that the pantie can be worn comfortably. The secondary absorbent body must therefore be made very thin and will subsequently have highly limited absorbency.

The combined absorbent body 8, comprising the primary  
35 and the secondary absorbent bodies, is enclosed conventionally between a fluid-permeable casing sheet and a fluid-impermeable but advantageously air-permeable casing sheet which lies against the pantie in use.

As will be seen from Figure 1, the side-contours of the secondary absorbent body follow the side-contours of the pantie within the region of the narrowest part of the crotch-part. This is highly advantageous when the combined absorbent body 8 is a removable type body, since its configuration clearly indicates where the absorbent body 8 shall be placed in the pantie. This eliminates to a large extent the risk of a user placing the absorbent body wrongly in the pantie.

As will be understood, the described pantie can be used together with absorbent bodies other than the absorbent body described with reference to the exemplifying embodiment, such as an absorbent body which lacks a secondary absorbent body of the aforescribed kind. The absorbent body may also have a shape different to that shown in Figure 1, for instance a rectangular shape.

Figure 5 shows a second embodiment of an inventive sanitary pantie. Those pantie components of the Figure 5 embodiment which find correspondence in the pantie illustrated in Figure 1 have been identified by the same reference signs to which a prime has been added.

In the case of the pantie illustrated in Figure 5, two elastic threads 15, 16 extend obliquely and symmetrically relative to a central long line through the front-part, the crotch-part and the back-part of the pantie, from the front-edge of the front-part 1' to the rear-edge of the back-part 2'. The threads 15, 16 cross one another at a point located in the midriff region of a user wearing the pantie. Similar to the pantie illustrated in Figure 1, the pantie includes two threads which diverge away from one another in a forward direction from the midriff point. These parts of the threads 15, 16 act in a manner analogous with the aforescribed corresponding thread-parts of the

Figure 1 embodiment when wearing the pantie with an inserted absorbent body.

5 The threads 15, 16 can be supplemented with threads 17, 18 which extend parallel with one another close to the aforesaid central long line, so as to cause a coacting absorbent body rearwardly of the midriff point to be pressed in against the wearer's body between the buttocks thereof.

10

It will be understood that the aforescribed embodiments can be modified in several ways within the scope of the invention. For instance, the pantie may be constructed from one single material sheet. The pantie  
15 may also include transverse elastics within the region of the primary absorbent body, particularly when the absorbent body is integral with the pantie, so as to deform an inserted absorbent body in the manner desired. In the case of removable absorbent bodies, the  
20 absorbent bodies may also be fastened to the pantie within the region of such transverse elastic. Further elastic threads may also be mounted between the laterally outermost threads 13 and 14, these threads also extending in a convergent-divergent pattern in relation to one another. An absorbent layer corresponding  
25 to the secondary absorbent body in the pantie of Figure 1 may also be formed integrally with the pantie. In this case, an absorbent body coacting with a pantie of this nature need only be enclosed in a  
30 fluid-permeable casing layer. The invention is therefore limited solely by the content of the following Claims.

Claims

1. A sanitary pantie or a light-incontinence guard comprising a back-part (2; 2'), a front-part (1; 1'), an intermediate crotch-part (3; 3') and elastic devices (11-14; 15-18) which extend between the front-part and the back-part of the pantie and which function to press an absorbent body (8) permanently mounted or removably attached to the pantie into abutment with the wearer's body, characterized in that two elastic devices (11, 12; 15, 16) extend from a region (V) in the crotch-part of the pantie to the front-edge of the front pantie-part (1; 1') while diverging relative to one another and extending generally symmetrically in relation to a central line (A-A) which extends through the back-part (2; 2'), the crotch-part (3; 3') and the front-part (1; 1') of the pantie.
2. A pantie according to Claim 1, characterized in that at least one elastic device (11, 12; 17, 18) extends from the region (V) in the crotch-part to the rear edge of the back pantie-part (2; 2') generally along a central line (A-A) which extends through the front-part (1; 1'), the crotch-part (3; 3') and the back-part (2; 2') of the pantie.
3. A pantie according to Claim 1 or 2, characterized in that at least two elastic devices (15, 16) extend from the crotch-part region to the rear-edge of the back pantie-part (2') while diverging relative to one another and extending symmetrically in relation to a centre line which passes through the back-part (2'), the crotch-part (3') and the front-part (1') of the pantie.
4. A pantie according to any one of the preceding Claims, characterized in that further elastic devices (13, 14) extend divergently in



relation to one another and symmetrically in relation to a central line (A-A) which passes through the front-part (1), the crotch-part (3) and the back-part (2) of the pantie, from the centre part of the crotch-part (3) to the rear-edge of the back-part (2) and to the front-edge of the front pantie-part (1).

5  
10 5. A pantie according to Claim 4, c h a r a c -  
t e r i z e d in that the further elastic devices  
(13, 14) that lie outermost in relation to said cen-  
tral line (A-A) extend along the side-edges of an  
absorbent body (8) coacting with the pantie, at least  
within the centre part of the crotch-part (3).

15 6. A pantie according to any one of the preceding  
Claims, c h a r a c t e r i z e d in that the elas-  
tic devices (11-14; 15-18) are comprised of elastic  
threads, bands or ribbons.

20 7. A pantie according to any one of the preceding  
Claims, c h a r a c t e r i z e d in that the pantie  
is comprised of two sheets or layers, and in that the  
elastic devices (11-14; 15-18) are mounted between  
said two sheets or layers.

25 8. A pantie according to Claim 7, c h a r a c -  
t e r i z e d in that the two pantie sheets or layers  
are joined to one another and to the elastic devices  
(11-14; 15-18) by gluing or ultrasonic welding.

9. A pantie as claimed in claim 1 substantially as  
hereinbefore described with reference to and as  
illustrated in any one of the Figures of the  
accompany drawings.

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Patents Act 1977  
 Examiner's report to the Comptroller under Section 17  
 (The Search report)

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Relevant Technical Fields

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(ii) Int Cl (Ed.5) A41B 9/02, 9/04, 9/12; A61F 13/15, 13/56, 13/72

Databases (see below)

(i) UK Patent Office collections of GB, EP, WO and US patent specifications.

(ii)

Search Examiner  
 D BUCKLEY

Date of completion of Search  
 9 DECEMBER 1994

Documents considered relevant following a search in respect of Claims :-  
 1 TO 9

Categories of documents

- X: Document indicating lack of novelty or of inventive step. P: Document published on or after the declared priority date but before the filing date of the present application.
- Y: Document indicating lack of inventive step if combined with one or more other documents of the same category. E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.
- A: Document indicating technological background and/or state of the art. &: Member of the same patent family; corresponding document.

Category	Identity of document and relevant passages		Relevant to claim(s)
X	GB 2183449 A	(PROCTER & GAMBLE) see elastic devices 65, Figure 1	1, 6 and 7 at least
X	GB 1356465	(JOWITT ET AL) see elastication at 3	1, 3, 6 and 7 at least
X	GB 902691	(FOSBURY) see elastic tapes 8, 9	1, 3 and 6
X	EP 0073183	(MOLNLYCKE) see elastic threads 8, 12	1, 3 and 6
X	EP 0033569	(PROCTER & GAMBLE) see elastic member	1, 3 and 6
X	US 4430086	(JOHNSON & JOHNSON) see especially Figure 11	1 and 3 to 8

Databases: The UK Patent Office database comprises classified collections of GB, EP, WO and US patent specifications as outlined periodically in the Official Journal (Patents). The on-line databases considered for search are also listed periodically in the Official Journal (Patents).

